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And if we take the *y* residuals we get the following six pairs of quantities, which should, but do not generally, agree:

−0″·50, −0″·25, or −0″·21 (V.–VI.)   +0″·50, +0″·07, or −0″·05 (VIII.–V.)
−0·01, +0·11, or −0·21 (VIII.–VII.)   +0·01, −0·29, or −0·05 (VII.–VI.)

It seems almost unnecessary, therefore, to solve these equations, as it would appear that the limit of accuracy has been nearly reached.

24. It must be remembered that the errors of the *réseau*, the tilt of the plate, and the optical distortion have been neglected. There are also several other directions in which the measures under discussion might be improved which it is not necessary to discuss here. The present investigation is not intended to show the limit of accuracy which may be obtained from a photograph; rather is it intended to point out that, with labour which (in my opinion) considerably exceeds that which can be afforded for the measurement of a plate for the Astrographic Chart, we must be content to accept accidental errors of at least ±0″·25. How far these errors may be reduced by refined investigations is a question of the utmost importance, but one which those concerned with the completion of the Astrographic Chart must (in my opinion) resolutely put aside for the present.

25. On the other hand, I consider that it is shown by the above and similar discussions how very rapidly stellar positions may be obtained from the plates with an accuracy of about ±0″·50. After all, this does not compare unfavourably with the accuracy of the meridian observations which must form our basis of operations; and in the work for the Chart it is important to remember that the saving of a single figure for each star reduces the labour appreciably.

26. It is in favour of the work on the Chart plates that this investigation is here terminated for the present.

Photograph of the Cluster H VI. 37 *Argûs.*

By Isaac Roberts, D.Sc., F.R.S.

The photograph of the cluster H VI. 37 *Argûs*, R.A. $7^h\ 55^m$, Decl. 10° 20′ south, was taken with the 20-inch reflector on 1894 February 27, with exposure of the plate during 90 minutes, and the copy now presented is enlarged to the scale of 1 millimetre to 24 seconds of arc.

The cluster is No. 2,506 in the *New General Catalogue* and No. 1,611 in the *General Catalogue*, where (p. 75) Sir J. Herschel describes it as pretty large, very rich, compressed, stars 11–20 mag.

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Lord Rosse (*Observations of Nebulæ and Clusters of Stars*, p. 63) records the results of nine observations made between the years 1849 and 1856, when he saw a spiral appearance by the brightest star, some unresolved milkiness about the central star, very curious black spaces, smaller stars so confused together as to give a nebulous look to parts of the cluster.

The photograph shows the cluster as a remarkable aggregation of faint stars in the midst of crowded surroundings of similar stars which cover the sky over several degrees. On the negative the cluster seems like an island in a sea, and the black spaces in it, referred to by Lord Rosse, are very conspicuous, and resemble those in the globular cluster Messier 13 *Herculis*. There are also branched lines and curves of stars very similar to those seen in globular clusters, but there is no indication whatever of nebulosity in this, as I always have found to be the case in globular clusters.

It puts little stress on the imagination to perceive in this cluster the progressive development of a globular cluster from a nebula or from meteorites, all the nebulosity being condensed into stars. Or we might take the converse of this, and assume that the stars are gravitating to a centre when they will collide and evolve nebulosity; but the first suggestion appears to me the more probable.

There are other examples of apparent similar developments; such, for instance, are the clusters ♅ VI. 33, 34 *Persei* and Messier 11 *Antinoi*, which indicate the forms of globular clusters, but without the nebulosity. These inferences will be better appreciated if I now show by the lantern the original negatives of this cluster and of ♅ VI. 33, 34 *Persei*, Messier 11 *Antinoi*, and M. 13 *Herculis*.

It will be seen that the resemblance which these clusters bear to the globular cluster is very striking, and impresses upon us the probability that such clusters as these and globular clusters have some close relationship in their origin like that herein suggested.

Photograph of the Nebulæ ♅ V. 42 *and* ♅ I. 176, 177 *Comæ Berenicis.* By Isaac Roberts, D.Sc., F.R.S.

The photograph of the nebulæ ♅ V. 42 and ♅ I. 176, 177 *Comæ Berenicis*, R.A. 12^h 38^m, Decl. 33° 0′ north, was taken with the 20-inch reflector on 1894 March 29, with exposure of the plate during three hours, and the copy now presented is enlarged to the scale of 1 millimetre to 24 seconds of arc.

The Nebula ♅ V. 42

is No. 4,631 in the *New General Catalogue*, and No. 3,165 in the *General Catalogue*, where Sir J. Herschel describes it as a

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